



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,348	03/24/2004	Kosuke Takasaki	Q80473	5375

23373 7590 04/06/2006
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

ISAAC, STANETTA D

ART UNIT	PAPER NUMBER
----------	--------------

2812

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/807,348

Applicant(s)

TAKASAKI ET AL.

Examiner

Stanetta D. Isaac

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the amendment filed on 1/18/06. Currently, claims 1-23 are pending. Claims 17-22 are withdrawn and claim 23 is newly added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto US Patent 7,001,797 in view Spooner et al. Patent Application Publication US 2002/0096743.

Hashimoto discloses the semiconductor method substantially as claimed. See figures 1A-14B, and corresponding text where, Hashimoto shows, pertaining to claim 1, a method for manufacturing a solid-state imaging device by adhering a transparent substrate, in which a plurality of frame-shaped spacers are formed, via an adhesive to a wafer on which plural solid-state imaging elements are formed, and by dividing the transparent substrate and the wafer for each solid-state imaging element, each of the solid-state imaging elements of the wafer being surrounded by each of the plurality of spacers, the method comprising the steps of: the adhesive is applied to the plurality of spacers 44 formed on the transparent substrate 42 (figure 1A, 1B; 3 and 4; col. 5, lines 33-39); applying pressure to the transparent substrate, which is adhered to the plurality of spacers formed on the transparent substrate (figure 1A; col. 5, lines 35-39). In

Art Unit: 2812

addition, Hashimoto shows, pertaining to claim 10, further comprising the step of carrying out surface modification to the surface of the spacer to which the adhesive is applied (col. 5, lines 40-52). Also, Hashimoto shows, pertaining to claim 16, wherein the spacer is bonded to the wafer over the surface to which the adhesive is applied (figure 5A; col. 5, lines 53-64).

However, Hashimoto fails to show, pertaining to claim 1, adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate. In addition, Hashimoto fails to show, pertaining to claims 2 and 3, wherein the transfer member is a rigid body such as a glass plate. Also, Hashimoto fails to show, pertaining to claims 4 and 5, wherein the transfer member is an elastic body such as a flexible plastic film. Hashimoto fails to show, pertaining to claim 6, wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant. In addition, Hashimoto fails to show, pertaining to claim 7, further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate. Also, Hashimoto fails to show, pertaining to claim 8, further comprising the step of applying a release agent on the surface of the transfer member. Hashimoto fails to show, pertaining to claim 9, wherein the release agent is silicon. In addition, Hashimoto fails to show, pertaining to claim 12, wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating. Also, Hashimoto fails to show, pertaining to claim 13, wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure. Finally, Hashimoto fails to show, pertaining to claim 23, further comprising

Art Unit: 2812

the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred from the transfer member onto the plurality of spacers bonds the plurality of spacers to the wafer.

Spooner teaches, in figures 1-42, and corresponding text, a similar method of manufacturing a semiconductor device where an adhesive material is in contact with the spacers. (paragraphs [0107-0108] and [0112-0115]).

It would have been obvious to one of ordinary skill in the art to substitute, the following steps of: Specifically, Spooner teaches the following steps of: adhering a transfer member to which the adhesive is applied and releasing the transfer member from the transparent substrate to transfer the adhesive, which is applied to the transfer member, from the transfer member onto the plurality of spacers formed on the transparent substrate; wherein the transfer member is a rigid body such as a glass plate; wherein the transfer member is an elastic body such as a flexible plastic film; wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant; further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate; further comprising the step of applying a release agent on the surface of the transfer member; wherein the release agent is silicon; wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating; wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure; further comprising the step of bonding the wafer to the transparent substrate by pressing the wafer and the plurality of spacers formed on the transparent substrate, wherein the adhesive transferred from the transfer member onto the plurality of spacers bonds

Art Unit: 2812

the plurality of spacers to the wafer, in the method of Hashimoto, pertaining to claims 1-9, 12, 13 and 23, according to the teachings of Spooner, with the motivation that, a transfer member, as taught by Spooner, can be included in the formation of the adhesive layer on the spacers. In addition, both Hashimoto and Spooner teach bonding the transparent substrate and a wafer substrate by using spacers that have an adhesive material formed thereon. Therefore, transferring the adhesive on the spacers that includes a transfer member would prove to be equivalent, since the ultimate goal would be to form an adhesive material onto the spacers, for the purpose of later bonding the transparent substrate and the wafer substrate together.

It would have been obvious to one of ordinary skill in the art to incorporate, the following steps of: wherein the viscosity of the adhesive is 0.1 Pa·S or more when the adhesive is applied to the transfer member; wherein the viscosity of the adhesive is 100 Pa·S when the adhesive is transferred to the spacer from the transfer member; wherein the adhesive has the thickness from 0.5 μm to 5.0 μm after the adhesive is activated, in the method of Hashimoto, pertaining to claims 11, 14 and 15, according to the combined teachings of Hashimoto in view of Spooner, with the motivation that Hashimoto in view of Spooner teach the formation of an adhesive layer formed on spacers. Therefore, having the above viscosities and thickness would result in routine experimentation.

Response to Arguments

Applicant's arguments with respect to claims 1-16 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanetta D. Isaac whose telephone number is 571-272-1671. The examiner can normally be reached on Monday-Friday 9:30am -6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2812

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stanetta Isaac
Patent Examiner
April 1, 2006


MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER